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U.S. Department
of Transportation
**United States
Coast Guard**

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Federal Communications Commission
Office of the Secretary

Ms. Donna R. Searcy, Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Dear Ms. Searcy:

The U.S. Coast Guard respectfully requests that the Commission initiate a rulemaking to amend CFR 47, Part 80, Stations in the Maritime Services, to include proposed minimum requirements for digital selective calling in maritime ship and coast station equipment sold in the U.S. (enclosure (1)).

Sincerely,

R. RAYMOND
U. S. Coast Guard
Acting Chief, Office of Command, Control and Communications

Enclosure: (1) Proposed Minimum Requirements

Copy: FCC Private Radio Bureau
RTCM
NMEA

Recommendation to Federal Communications Commission

23 June 1992

Proposed Minimum Requirements for Digital Selective Calling in Maritime Ship and Coast Station Equipment Sold in the U.S.

On 1 February 1999, it will no longer be possible to contact cargo, passenger and certain other ships in international waters over maritime radios not having digital selective calling (DSC) capability. These ships will discontinue their guard of all voice radio channels, including VHF channel 16 and 2182 kHz, on that date. The U.S. Bridge-to-Bridge Act does require vessels to continue monitoring VHF channel 13, but use is limited to intership navigation, and the requirement does not apply outside U.S. waters.

As the Commission noted in their Report and Order implementing the Global Maritime Distress & Safety System (PR Docket 90-480), these changes offer "significant advantages for marine safety that should not be delayed." Digital selective calling, an important element of the GMDSS, does indeed offer opportunities to significantly improve marine safety. However, unless steps are taken to ensure radio interoperability between compulsory ships fitted with the GMDSS and voluntary ships which are not, this opportunity for improved safety could instead result increased collisions at sea and other hazards, reducing marine safety.

To resolve this problem, we propose that VHF and MF/HF maritime ship and coast station radiotelephone equipment sold in the U.S. after 1 February 1997 be required to include at least a minimum digital selective calling capability. We believe this would have significant safety benefits without affecting existing vessel carriage requirements.

Background.

On February 1, 1992, changes to the Safety of Life at Sea (SOLAS) Convention affecting distress and safety telecommunications came into effect. The SOLAS Convention is a treaty document affecting cargo, passenger and other ships on international voyages. The SOLAS Convention has been both an international and national standard for maritime distress and safety telecommunications for all of the maritime community, including those vessels not specifically subject to the Convention.

These changes will require ships to begin carrying VHF and MF/HF radios with digital selective calling capable of initiating radiotelephone calls. DSC will be mandatory on board all ships of this type within eight years. This will allow them to discontinue watchkeeping on VHF channel 16 and on 2182 kHz on February 1, 1999 (SOLAS regulation IV/12.3 and .4, and 80.1123(c) and (d) of the Commission's rules). Once this occurs, non-SOLAS vessels (e.g. pleasure craft, charter vessels and commercial fishing vessels) without DSC will be unable to contact a SOLAS vessel in a closing situation or other emergency in international waters. The Coast Guard currently responds to an average of 360 collision incidents between vessels each year, with a yearly average loss of 12 lives and over $5 million. Once existing radio watchkeeping rules are suspended in 1999, we believe these collisions will likely increase unless DSC, the means for contacting SOLAS vessels by radiotelephone, comes into common use.

DSC also provides the opportunity for reducing or eliminating the congestion problem on VHF channel 16, alleviating hoax problems, better assurance a distress alert will be heard, and improved distress radio watchkeeping on VHF and MF/HF by Coast Guard stations.

Proposed Minimum Requirements.

VHF and MF/HF ship and coast station radiotelephone equipment manufactured or sold in the U.S. effective 1 February 1997 must meet the requirements of 80.225 of the Commissions rules, except as modified below. Although a second receiver dedicated to DSC is often preferable, it is not required. One tunable receiver, capable of tuning to DSC or voice channels, is acceptable.

VHF Radiotelephone. DSC transmit and receive requirements to the extent described below. These requirements are also listed under the column VHF SC101 in Table 1. Call sequences are included in Tables 2 and 3. Handheld radios can be excluded in the same way time-out timer requirements were excluded:

1. DSC transmission of:

    a. Distress all-ships call
    b. Routine all-ships call
    c. Telecommand, with request to respond on a selected channel, defaulting to channel 16 if no channel is selected (channel selection is not required).
    d. Power cutback to 1w on routine all-ships calls.

2. DSC reception (when radio tuned to channel 70) of:

    a. Distress call
    b. Distress relay
    c. Distress acknowledgement
    d. Distress relay acknowledgement
    e. Any all-ships call
    f. Any call to individual ship station
    g. Telecommand, tune to voice channel requested. If radio cannot respond, transmit cannot comply, or request respond on channel 16.
    h. No special display requirements.

3. NMEA 0183 or IEC 1162 interface, or ability to manually enter location and time information is required.

MF/HF (Single Sideband) Radiotelephone:

1. Full Class B Transmit and Receive Requirement (see Table 1).

2. NMEA 0183 or IEC 1162 interface, or ability to manually enter location and time information is required.

Coast Guard Implementation of a U.S.-wide Digital Selective Calling System

The Coast Guard has requested funding over a five year period beginning this year to implement the GMDSS. Congress has fully funded our request for this first year. As part of this program, we plan to install both an A1 (VHF DSC) and an A2 (2187.5 kHz DSC) coastal service area, in areas where we already provide 2182 kHz coverage and where our VHF-FM National Distress System already provides channel 16 coverage. In addition, we plan to install an HF DSC capability on all HF DSC distress channels serving both the North Atlantic and Pacific Ocean areas. We have already begun installing HF DSC and trial operational VHF DSC services. We plan to begin installing 2187.5 kHz DSC services in 1994, and VHF DSC services in 1995. We also plan to install radio equipment having VHF and MF/HF DSC capability on our cutters.

Solicitation of Manufacturers

In order to ensure this proposal would not adversely affect manufacturers or others in the maritime community, we asked both the Radio Technical Commission for Maritime Services (RTCM) and National Marine Electronics Association (NMEA) for assistance. The RTCM reactivated special committee (SC101) comprised of users, manufacturers and government members to review DSC matters and recommend what, if any, regulatory solutions should be pursued. There was a consensus at RTCM that a full DSC capability, particularly on low cost VHF radiotelephones, was unnecessary, but agreed that it is timely for a DSC capability to be required on marine radios. Consequently, we have significantly limited the DSC requirement on these radios. The NMEA informally discussed this petition and cost impact with their members during late 1991 and early 1992. We also wrote manufacturers in December 1991 asking for their comments concerning this proposal and cost impact.

Requirement Date

The effective date 1 February 1997 is proposed to allow users at least two years to voluntarily purchase radios before the GMDSS comes fully into force by the treaty date February 1, 1999, when GMDSS vessels discontinue watchkeeping on VHF channel 16 and 2182 kHz. A later date would give mariners insufficient time to upgrade their radio equipment to be compatible with the GMDSS. Because safety is involved, we suggest the Commission consider a date earlier than February 1997.

Vessel Carriage Requirements

We are not proposing any new carriage requirements for DSC-equipped radios on vessels. We believe DSC should be a standard function on all marine radios for safety reasons, in the same way automatic transmitter power reduction is and time-out timers soon will be a standard part of all VHF marine radios (80.215(g)(3) and 80.203(c) of the Commission's rules). We believe this approach to provide the greatest safety benefit to the most mariners, at the least cost.

Using DSC for Unattended Vessel Monitoring

80.179(e) of the Commissions rules allow DSC on channel 70 to be used for unattended vessel monitoring. Since these rules were adopted, the GMDSS has come into force, using DSC on channel 70 for all routine distress and safety calling as well as for distress alerts. Additionally, the Coast Guard plans to use DSC on channel 70 for vessel traffic service dependent surveillance in accordance with recommendations of the International Radio Consultative Committee (CCIR) and the International Association of Lighthouse Authorities (IALA). For these reasons, it may be inappropriate to continue using DSC on channel 70 for unattended vessel monitoring in the future, in areas of significant DSC traffic. For this reason, we propose that 80.179(e) be amended as follows:

(1) The prohibition from transmitting DSC on channels other than 70 in 80.179(e)(7) is no longer appropriate and should be deleted. The transmitter inhibition requirement for channel 70 should be retained, however.

(2) Use of channel 70 for unattended vessel monitoring should be prohibited in vessel traffic service areas using channel 70 for dependent surveillance. The only VTS where DSC dependent surveillance is currently planned is Prince William Sound, Alaska, but expansion to other areas is likely.

(3) Use of channel 70 for unattended vessel monitoring should also be prohibited in areas where CCIR recommendations on DSC channel loading are exceeded or are soon expected to be exceeded.

C. E. HAMMOND
[illegible], U. S. Coast Guard
[illegible]Chief, Office of Command,
Control and Communications

Digital Selective Calling Classification Table 9 June 1992

	Class A		Class B		Class C	VHF SC101	
	Tx	Rx	Tx	Rx	Tx	Tx	Rx
Transmit capabilities:							
Format specifier:							
Distress call	X	X	X	X	X	X	X
All ships call	X	X	X	X	.	X	X
Selective individual station call	X	X	X	X	.	.	X
Selective Semi-automatic/automatic service call	X	X	X	X	.	.	.
Selective call (group of ships)	.	X	.	X	.	.	.
Selective call (ship in geographic area)	.	X	.	X	.	.	.
Vessel traffic service call	.	.	.	.	.	.	.
Numerical identification of the station (address)	X	X	X	X	.	.	.
Self-identification (automatically inserted)	X	.	X	.	X	X	.
Frequency or Channel Information (non-distress)	X	X	X	X	.	X	X
Time and position (for distress call only)	X	X	X	X	.	X	.
Ships Position Information	X	X	X	X	.	.	.
Category:							
Distress	X	X	X	X	.	.	X
Urgency	X	X	X	X	.	.	.
Safety	X	X	X	X	.	.	.
Ship's Business	X	X	.	.	.	.	.
Routine	X	X	X	X	.	.	X
Distress categories:							
Undesignated	X	X	X	X	X	X	X
Fire, explosion	X	X	.	.	.	.	.
Collision	X	X	.	.	.	.	.
Grounding	X	X	.	.	.	.	.
Listing, in danger of capsizing	X	X	.	.	.	.	.
Sinking	X	X	.	.	.	.	.
Disabled and adrift	X	X	.	.	.	.	.
Abandoning ship	X	X	.	.	.	.	.
EPIRB emission	.	X	.	X	.	.	.
Telecommands:							
VHF FM Simplex telephony	X	X	X	X	.	X	X
VHF FM Duplex telephony	X	X	X	X	.	.	X

	Class A		Class B		Class C	VHF SC101	
	Tx	Rx	Tx	Rx	Tx	Tx	Rx
Polling (tracking)	X	X	.	.	.	.	.
Selection information (telephone number)	X	.	X	.	.	.	.
Unable to comply:							
No reason given	X	X	.	X	.	.	.
Congestion at maritime switching center	.	X	.	X	.	.	.
Busy	X	X	.	X	.	.	.
Queue indication	.	X	.	X	.	.	.
Station barred	.	X	.	X	.	.	.
No operator available	X	X	.	X	.	.	.
Operator temporarily unavailable	X	X	.	X	.	.	.
Equipment disabled	X	X	.	X	.	.	.
Unable to use proposed channel	X	X	.	X	.	.	.
Unable to use proposed mode	X	X	.	X	.	.	.
End of call	X	X	X	X	.	.	.
Emission or type of call:							
Single sideband telephony	X	X	X	X	.	.	.
Single sideband full carrier telephony	X	X	X	X	.	.	.
Radiotelex (SITOR) FEC	X	X	.	.	.	.	.
Radiotelex (SITOR) ARQ	X	X	.	.	.	.	.
Radiotelex (SITOR) receive only	X	X	.	.	.	.	.
F1B/J2B other than radiotelex	X	X	.	.	.	.	.
Recorder Morse Code	X	X	.	.	.	.	.
Manual Morse Code	X	X	.	.	.	.	.
Facsimile	X	X	.	.	.	.	.
Data							
CCITT V.21	X	X	.	.	.	.	.
CCITT V.22	X	X	.	.	.	.	.
CCITT V.22bis	X	X	.	.	.	.	.
CCITT V.23	X	X	.	.	.	.	.
CCITT V.26bis	X	X	.	.	.	.	.
CCITT V.26ter	X	X	.	.	.	.	.
CCITT V.27ter	X	X	.	.	.	.	.
CCITT V.32	X	X	.	.	.	.	.
Distress Acknowledgement	X	X	X	X	.	.	X
Distress Relay Acknowledgement	.	X	.	X	.	.	X
Acknowledgement, Able to Comply	X	X	.	X	.	.	.
Acknowledgement, Unable to Comply	X	X	.	X	.	.	.
Distress Relay	X	X	X	X	.	.	X

	Class A		Class B		Class C	VHF SC101	
	Tx	Rx	Tx	Rx	Tx	Tx	Rx
Test (MF and HF only)	X	X	X	X	.	.	.
Ship position or location registration updating	X	X	.	.	.	.	.
No Information (if no telecommand information is sent)	X	.	X	.	.	X	.
Neutral ships & aircraft in a war zone (RR Res 18)	X	X	.	.	.	.	.
Medical transport	X	X	.	.	.	.	.
Pay-phone/public call office	X	X	.	.	.	.	.
No second telecommand information	X	.	X	.	.	X	.
Power cutback to 1w on routine VHF all-ship calls	X	.	X	.	.	X	.

There are two formats required to be transmitted by the proposal. Table II shows the format for a distress call. Table III shows the format for a routine all-ships call.

TABLE II- FORMAT OF DISTRESS CALL

(2) Format Specifier	(0) Address	(0) Category	(5) Self ID	(1) Nature of Distress	(5) Distress Coordinates	(2) Time	(1) Telecommand	(1) EOS	(1) ECC
Distress Call 112	–	–	XXXXX	Undesignated 107	XXXXX	XX	F3E/G3E Simplex 100	127	ECC

TABLE III- FORMAT OF ROUTINE ALL-SHIPS CALL

(2) Format Specifier	(0) Address	(1) Category	(5) Self ID	(1) Telecommand 1	(1) Telecommand 2	(6) Channel	(1) EOS	(1) ECC
All-ships Call 116	–	Routine 100	XXXXX	F3E/G3E Simplex 100	No Information 126	XXXXXX	127	ECC

(): number of symbols
X: a symbol representing a number between 00 and 99
EOS: end of sequence
ECC: error check character